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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,252	08/13/2001	Slim Salah Souissi	05118-38 (6507/54314)	8798
7590	07/11/2005		EXAMINER	
Donald L. Bartels Coudert Brothers LLP Two Palo Alto Square 3000 El Camino Real, 4th floor Palo Alto, CA 94306-2121			LUGO, DAVID B	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/929,252

Applicant(s)

SOUISSI ET AL.

Examiner

David B. Lugo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/6/01, 2/15/02
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of species I in the reply filed on 5/26/05 is acknowledged. The traversal is on the ground(s) that claim 6, which reads on species II is not patentably distinct from claim 1, which is considered by Applicant to be a generic claim. This argument is found persuasive. Accordingly, claims 1-6 and 8 will be examined on the merits.
2. Claim 7 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 5/26/05. However, Applicant conceded withdrawal of claim 7.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "740" has been used to designate both a switch and the op amp of Fig. 8B.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

4. The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 640, 650, 660, 670 and 680 (Fig. 7B).

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application.

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Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

In the Brief Description of the Drawings, reference should be made to Figures 7A & 7B instead of only Figure 7. Appropriate correction is required.

Claim Objections

6. Claims 1-6 and 8 are objected to because of the following informalities:

- a. Claim 1, line 5, it is suggested that "input RF input signal" be changed to either --input RF signal-- or --RF input signal--.
- b. Claim 8, line 5, it is suggested that "input RF input signal" be changed to either --input RF signal-- or --RF input signal--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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8. Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by Liu U.S. Patent 6,778,594.

Regarding claim 8, Liu discloses a method comprising detecting an RF signal during a receive mode, where an RF signal is considered to be output to an antenna during a transmit mode, the input RF signal is split into first and second RF signals at terminal 12 (Fig. 2), filtering and band limiting the first and second RF signals using in-phase and quadrature component polyphase filters 33 to generate first and second output bandlimited and tuned signals, and demodulating the first and second output bandlimited and tuned signals to generate an output digital signal comprising a plurality of bits in demodulator 72.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu in view of Loper U.S. Patent 5,339,040 and Song U.S. Patent 6,049,573.

Regarding claim 1, Liu discloses a receiver in Figure 2, considered part of a transceiver unit, comprising an RF input stage (11/20) for input of an RF signal from an antenna, where the output of the RF input stage is split into first and second RF signals, a programmable oscillator 15, considered part of a direct digital synthesis and control circuit as it provides a digital, frequency-synthesized LO function (col. 5, lines 49-52), a polyphase filter for filtering and

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bandlimiting the first and second RF signals to generate first and second bandlimited output signals, and a baseband processor 72 for demodulating the first and second output bandlimited signals to generate an output digital signal comprising data bits (col. 8, lines 13-16).

Liu does not expressly disclose that the RF input stage is part of an RF I/O stage for input of an RF signal from an antenna during a receive mode and output of an RF signal to an antenna during a transmit mode. Loper discloses a transceiver in Figure 1 including an RF I/O stage (coupler 12) for input of an RF signal from an antenna during a receive mode and for output of an RF signal to an antenna during a transmit mode. It would have been obvious to one of ordinary skill in the art to use an RF I/O stage as taught by Loper along with the transceiver of Liu in order to enable bidirectional communication.

In addition, Liu shows in Figure 3 that an RF signal is split into two separate paths, Liu does not expressly show an RF splitter for splitting the RF input signal. Loper discloses the use of an RF splitter 32 in Figure 2 for splitting an input RF signal into first and second RF signals. It would have been obvious to one of ordinary skill in the art to use an RF splitter as taught by Loper in to split the RF input signal in the receiver of Liu in order to provide for the splitting of the input signal.

Further, Liu discloses a single polyphase filter 33 for filtering the first and second RF input signals, and thus does not show an in-phase component polyphase filter and a quadrature component polyphase filter. Song discloses separate polyphase filters for I and Q components (Fig. 3). It would have been obvious to one of ordinary skill in the art to use separate polyphase filters as disclosed by Song in the transceiver of Liu as a matter of design consideration.

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11. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu in view of Loper and Song and further in view of da Franca "Nonrecursive Polyphase Switched-Capacitor Decimators and Interpolators".

Regarding claim 2, Liu in combination with Loper and Song disclose a transceiver including polyphase filters as described above, but do not disclose that the polyphase filters include switched capacitor filters. Da Franca discloses switched-capacitor filters based on polyphase structures resulting in highly accurate frequency responses (see p 886, section V). It would have been obvious to one of ordinary skill in the art to use switched-capacitor filters as disclosed by da Franca in the transceiver of Liu to provide highly accurate frequency responses.

Regarding claim 3, Liu further discloses that the LO_I and LO_Q outputs are 90 degrees out of phase, thus resulting in the polyphase filters being 90 degrees out of phase. Liu further shows that mixer elements (13, 14) are associated with the polyphase filters, but does not show that they convert the RF signal to a baseband frequency. However, Song discloses that an RF input 102 is mixed down to baseband by mixers 106 and 108 associated with polyphase filters 200 (col. 2, lines 22-26). It would have been obvious to one of ordinary skill in the art to use the mixers to mix the RF signal down to baseband instead of IF as a matter of design choice, as downconversion to baseband is a special case of IF downconversion (i.e. zero IF).

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu in view of Loper and Song, as applied to claim 1 above, and further in view of Strolle et al. U.S. Patent 6,169,767.

Regarding claim 4, Liu in combination with Loper and Song disclose a transceiver as described above, but do not disclose a third polyphase filter coupled to the baseband processor and the DDS for modulating data bits in a transmit mode to generate an output RF signal.

Strolle et al. disclose the use of a polyphase filter 2183 (Fig. 4) in a modulator 218 of a transmit chain (Figs. 2 and 4), for pulse shape filtering (col. 1, lines 43-46). It would have been obvious to one of ordinary skill in the art to use a polyphase filter as taught by Strolle et al. in the transceiver of Liu in combination with Loper and Song to enable transmission at variable rates for a plurality of modulation formats.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu in view of Loper, Song and Strolle et al., as applied to claim 4 above, and further in view of da Franca.

Regarding claim 5, Liu in combination with Loper, Song and Strolle et al. disclose a transceiver including a polyphase transmit filter as disclosed above, but do not expressly disclose that the polyphase filter includes a switched capacitor filter. Da Franca discloses switched-capacitor filters based on polyphase structures resulting in highly accurate frequency responses (see p 886, section V). It would have been obvious to one of ordinary skill in the art to use switched-capacitor filters as disclosed by da Franca in the transceiver of Liu to provide highly accurate frequency responses.

14. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu in view of Loper, Song, da Franca and O'Dell et al. U.S. Patent 6,452,982.

Regarding claim 6, Liu discloses a receiver in Figure 2, considered part of a transceiver unit, comprising an RF input stage (11/20) for input of an RF signal from an antenna, where the output of the RF input stage is split into first and second RF signals, a programmable oscillator

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15, considered part of a direct digital synthesis and control circuit as it provides a digital, frequency-synthesized LO function (col. 5, lines 49-52), a polyphase filter for filtering and bandlimiting the first and second RF signals to generate first and second bandlimited output signals, and a baseband processor 72 for demodulating the first and second output bandlimited signals to generate an output digital signal comprising data bits (col. 8, lines 13-16).

Liu does not expressly disclose that the RF input stage is part of an RF I/O stage for input of an RF signal from an antenna during a receive mode and output of an RF signal to an antenna during a transmit mode. Loper discloses a transceiver in Figure 1 including an RF I/O stage (coupler 12) for input of an RF signal from an antenna during a receive mode and for output of an RF signal to an antenna during a transmit mode. It would have been obvious to one of ordinary skill in the art to use an RF I/O stage as taught by Loper along with the transceiver of Liu in order to enable bidirectional communication.

In addition, Liu shows in Figure 3 that an RF signal is split into two separate paths, Liu does not expressly show an RF splitter for splitting the RF input signal. Loper discloses the use of an RF splitter 32 in Figure 2 for splitting an input RF signal into first and second RF signals. It would have been obvious to one of ordinary skill in the art to use an RF splitter as taught by Loper in to split the RF input signal in the transceiver of Liu in order to provide for the splitting of the input signal.

Further, Liu discloses a single polyphase filter 33 for filtering the first and second RF input signals, and thus does not show an in-phase component polyphase filter and a quadrature component polyphase filter. Song discloses separate polyphase filters for I and Q components

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(Fig. 3). It would have been obvious to one of ordinary skill in the art to use separate polyphase filters as disclosed by Song in the transceiver of Liu as a matter of design consideration.

Liu although disclosing the use of capacitors in a polyphase filter (Fig. 4), does not expressly state that the polyphase filters are switched capacitor filters. Da Franca discloses switched-capacitor filters based on polyphase structures resulting in highly accurate frequency responses (see p 886, section V). It would have been obvious to one of ordinary skill in the art to use switched-capacitor filters as disclosed by da Franca in the transceiver of Liu to provide highly accurate frequency responses.

Liu, while disclosing a mixer at the input of the polyphase filter, does not disclose a mixer coupled to the output of each switched capacitor filter for tuning the output of the filter. O'Dell et al. disclose mixers placed after a polyphase filter so the filter would not require complex filtering (col. 5, lines 56-59). It would have been obvious to one of ordinary skill in the art to use mixers after the polyphase filters as taught by O'Dell in the transceiver of Liu so the filters would not require complex filtering.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Chalmers U.S. Patent 5,640,416 discloses a downconverter using polyphase filters.

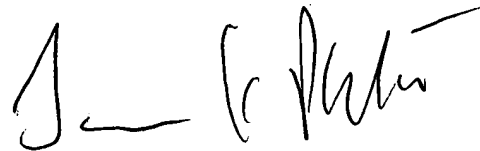
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Lugo whose telephone number is 571-272-3043. The examiner can normally be reached on M-F; 9:30-6.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lugo
7/5/05

A handwritten signature in black ink, appearing to read 'Jay K. Patel', is written over the printed name and title.

JAY K. PATEL
SUPERVISORY PATENT EXAMINER